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Talk Abstract

Improving Vaccine Design Against The Ectoparasite *Dermanyssus Gallinae*

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The poultry red mite, *Dermanyssus gallinae* is a temporary blood-feeding ectoparasite of poultry, wild birds and sometimes mammals. In commercial poultry production *D. gallinae* is mainly controlled via hygiene and chemical methods. Due to acaricide resistance and the withdrawal of acaricides through changes in national and European legislations there is an urgent need to develop alternative control methods such as vaccination campaigns. However, developing a vaccine against ectoparasites that only interact with host immunity via ingestion of the blood meal is extremely difficult due to the limited targets for host immune mechanisms.

We successfully immunised chickens with either somatic *D. gallinae* antigens or recombinant proteins and the birds developed a strong antibody (IgY) response. Mortality in mites fed on blood spiked with IgY from vaccinated birds was up to 35% higher than non-vaccinated controls. Mite feeding stimulates an initial inflammatory response but feeding does not generally appear to stimulate pronounced host immune responses other than IgY production. Vaccination with somatic *D. gallinae* proteins stimulates a down-regulation of the IL4 and IL5 in birds and an up-regulation of the IL10, cytokines involved with inflammation.

Other proteins are now being considered, including antigen cocktails, to enable increased efficacy of a potential *D. gallinae* vaccine.